



platform solutions

on-line news for the hardware developer

Issue 12, August 14, 1998

Feature Story

Each month we'll provide a feature article on key industry trends and developments. Authored by a member of Intel's Executive Staff, you'll find insightful and useful information for product development, planning and execution.

Top News Stories

Delivering an in-depth report on key platforms, products and technologies, our Top Stories provide a monthly source of information on the issues affecting hardware developers. Be sure to check in every month for the latest stories that are driving the evolution of the industry.

Platform News and Information

Every month we cover the latest developments in platform initiatives and technologies. Our "Platforms" pages provide news on the latest trends and initiatives for the business, home, mobile, server and workstation platforms. Our "Industry Events" page keeps you up to date on upcoming industry gatherings targeted at the platform and peripheral developer, including the new Intel Developer Forum.

Technology News

Our "Technologies" pages give you quick and detailed information on the industry status of specific platform technologies, from the emergence of the Accelerated Graphics Port (AGP) to the latest advances in Intel® microprocessors, memory, Audio, USB, 1394, DVD, Power Management, and PC 98/99. This department is your source for the hottest technology and product announcements, white papers, design guides, specifications, tools and developer events available to the industry.

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On behalf of all of us at Platform Solutions, welcome to the future of the PC platform!

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Feature

The Need for Speed on the Internet

By Kevin Kahn
Intel Fellow, Intel Architecture Labs

You undoubtedly experience it each time you access the Internet from home: No matter how powerful your PC is, you can't navigate the Web as quickly as you would like. Indeed, traveling at slow speeds is the biggest complaint PC users levy against the Internet. But the Internet is one of the primary reasons people purchase home PCs today; so it is important for the industry to find new ways to speed up Internet connections.

That's where Intel's broadband communications efforts come into play. While today's Internet connections have reached their peak, Intel is working on new technologies to create faster Internet connections at speeds greater than 1 Mb/sec.

Intel's Broadband Initiative

Increasing the speed of Internet connections is a major part of Intel Architecture Labs' (IAL) Broadband initiative. The initiative focuses on increasing the capacity of video and data communications to the PC. With bigger, better, and faster connections, consumers will eventually be able to receive compelling broadband digital content from anywhere in the world.

IAL is advocating the development of improved residential broadband infrastructure by investing in various transports, including digital subscriber lines (DSL), cable and satellite. We expect that consumers will ultimately have a competitive choice of Internet access via multiple of these technologies, and this competition will insure that such service is affordable and richly featured. We are working with key companies in each of these industries to develop new equipment and standards to enable the rapid deployment of services.

Enabling Faster Internet Connections: DSL, Cable and Satellite

For PC users who travel the Web via a DSL connection, Intel has been involved in enabling a new modem standard that will provide high bandwidth Internet access at speeds of up to 1.5 Mb/sec, easily surpassing today's fastest 56k modems. These new modems, which are expected to appear before the end of the year, are the result of concerted efforts in various working groups and standards bodies interested in enhancing the use of telephone lines for broadband communications. The efforts encompass both practical engineering activities to develop the necessary technology, as well as the standards definitions needed to assure interoperability among real products. These groups include the Internal Telecommunications Union, the official standards body, as well as such groups as the ADSL Forum, ATM Forum, and USB Implementers' Forum.

On the cable front, Intel has been working with cable companies to help provide data services on cable lines. Traditionally, cable lines have only been used for *sending* video using analog techniques. Cable companies are presently upgrading their infrastructures to permit the use of digital transmission, and to support both the sending and *receiving* of information. Similar to the efforts with DSL connections, Intel has jointly worked with cable companies to develop the necessary architectures and open specifications to move data over the cable service. This has included aiding in the specification of new cable modems to enable PC access to the Internet using the cable system. In fact, the first set of modems providing digital data services at 1–2 MB/sec became available to cable users in the first half of this year.

Similar to the efforts of the cable companies, satellite TV service providers have joined and created a digital video broadcast specification to enable advanced satellite modems. Intel is working to ensure that the connection of such modems to the PC is well supported and straightforward. Satellite data services will be oriented toward the high-speed delivery of data to PCs that can then be browsed off-line at the user's leisure. While not necessarily full two-way traditional Internet service, such a satellite service should enable compelling new applications.

USB: The Preferred Connector

The key to enabling these three faster Internet connections is to ensure that they're simple to use. In all cases, upgrading to the faster connections involves using new modems, thus requiring the installation of some new equipment and software. It is critical that the user be able to complete this installation without requiring service provider assistance. To facilitate this, Intel is evangelizing the Universal Serial Bus (USB) as the best means of connecting broadband communication devices. With its Plug and Play capability, USB will considerably simplify installing these new devices.

The Future of Broadband Communications

Stay tuned to *Platform Solutions News (PSN)* for news on broadband communications, and be sure to read the related broadband communications stories in this issue. Intel looks forward to seeing the advances in broadband communications continue over the course of this year as we continue to enable computing solutions and serve the needs of all PC users.

About the Author:

Dr. Kahn is an Intel Fellow, the corporation's highest technical position, and currently the Director of Communications Architecture for Intel Architecture Labs. He helps drive communications strategies and policy for the corporation.

For More Information:

Be sure to read the Top Stories in this month's issue of *PSN*:

Intel Architecture Labs: Enabling New Computing Experiences—

<http://developer.intel.com/solutions/issue/focus.htm>

The Intel Developer Forum: Continuing Beyond the Spec in September, by Dan Russell—

<http://developer.intel.com/solutions/issue/stories/top6.htm>

USB: The Home PC Broadband Connection, by Karthik Ranjan—

<http://developer.intel.com/solutions/issue/stories/top1.htm>

On the Fast Track to Universal ADSL, by Mark Peden—

<http://developer.intel.com/solutions/issue/stories/top2.htm>

Making the PC-Cable Connection, by Teri Lasley—

<http://developer.intel.com/solutions/issue/stories/top3.htm>

Satellite Modems: Delivering High-Speed Content, by Jeff Einarson—

<http://developer.intel.com/solutions/issue/stories/top4.htm>

Beating the Heat: Fan Duct Specification Keeps Systems Cool, by Scott Noble—

<http://developer.intel.com/solutions/issue/stories/top5.htm>

Plugfest: Where the Best Come to Test, by Patrick Bohart—

<http://developer.intel.com/solutions/issue/top7.htm>

Instantly Available PC Technology: Energy Savings in a Changing World, by Steve Brown—

<http://developer.intel.com/solutions/issue/stories/top8.htm>

Breaking the Server I/O Bottleneck, by Dexter Johnson—

<http://developer.intel.com/solutions/issue/stories/top9.htm>

Focus

Intel Architecture Labs: Enabling New Computing Experiences

Founded in 1991, the Intel Architecture Labs were created to foster new users—and new uses—for computing. That means working with others in the industry to help deliver new capabilities that provide real end-user value, along with continually striving to make the PC platform easier to use and manage.

Since its founding, IAL has participated in developing and fostering many new specifications and technologies throughout the industry, including the Universal Serial Bus (USB), the PCI bus, and the 1394 high-speed bus specification. IAL engineers—70 percent of whom are involved in software activities—concentrate their R&D efforts in areas that benefit large numbers of new users.

IAL is focusing its efforts on several key initiatives such as:

- **Anywhere in the Home (AITH)** On average, people use their home PC one to two hours a day—and only when they're within an arm's length of the keyboard and mouse. To make "whole-house" computing a reality, IAL is working on new kinds of I/O, such as natural language speech recognition and synthesis, and new applications for the home and family. In addition, IAL is developing open specifications for home device control, toys, and cordless PC peripherals that can be accessed by infrared and radio frequency-controlled devices, as well as wireless technologies.
- **Internet Media (IM)** The IM initiative focuses on creating next-generation Internet media-based technologies for business and entertainment applications. IAL seeks to maximize the PC's performance by combining computer and network connections to create the most robust multimedia experiences possible. In this capacity, IAL works closely with industry leaders in audio, video, graphics, networking, and imaging to help deliver rich multimedia over the Internet. The goal of these collaborations is to improve business productivity and create exciting computing experiences for consumers.
- **Manageability** IAL provides added value by supporting Wired for Management (WfM), Intel's initiative to improve the manageability of desktop, mobile, and server systems. WfM guidelines help to enable four critical areas for managing and controlling computing environments. Asset Management focuses on the built-in instrumentation that identifies the internal contents of a system, while Service Boot features make it possible to remotely configure systems. A remote wake-up feature—defined as Off-Hours Maintenance—enables technicians to run maintenance tasks from remote locations and at times other than normal business hours. And Reduced Power Consumption focuses on built-in power-management features that enable the computer to enter low-power sleep states.
- **Broadband** IAL's Broadband Initiative centers on increasing the capacity of video, voice, and data communications to the PC. With better and faster connections, consumers can receive complex digital content from anywhere in the world. Intel advocates the development of a broadband infrastructure by investing in various transports that include cable, Digital Subscriber Line (DSL), and satellite technologies. IAL also works with the communications industry to define a complete architecture to enable such broadband applications as videoconferencing, digital television, enhanced television (ETV), and datacasting.

For More Information:

For more information please be sure to check out the IAL Web site—

<http://developer.intel.com/IAL/index.htm>

and the IAL technology page in this newsletter—

<http://developer.intel.com/solutions/tech/IAL.htm>

Top Stories

The Intel Developer Forum: Continuing Beyond the Spec in September

By Dan Russell
Director of Platform Marketing
Intel Corporation

Last September, Intel took an important step forward in helping to enable new developments and product breakthroughs for desktop, workstation, mobile, and server platforms by hosting the inaugural Intel Developer Forum (IDF). The event proved so successful that Intel followed up with a second IDF, held in February. And now Intel is hosting the third IDF, scheduled for September 15–17 at the Palm Springs Convention Center in Palm Springs, California. This event will focus on helping OEMs and IHVs move Beyond the Spec when Designing Platform Solutions.

Special features of the September IDF will include the latest information on implementing Katmai platform technology and discussions about how Intel plans to respond to industry segmentation issues.

Keynotes Set the Stage

Each day of September '98 IDF will feature keynote presentations by key Intel executives, held each morning to kick off the day's proceedings. These keynotes will outline Intel's strategic vision of the trends, products, and technologies that are shaping the evolution of the industry.

On Tuesday, September 15, Intel President and Chief Executive Officer Craig Barrett will talk about how he sees the market developing during the next year, along with the implications those developments hold for Intel's product and technology roadmaps moving forward. Following Dr. Barrett, Albert Yu, Senior Vice President and General Manager of the Microprocessor Products Group, will discuss upcoming technologies and products relating to Intel's family of branded processors that are tailored for specific market segments.

On Wednesday, September 16, John Miner, Intel Corporate Vice President and General Manager of the Enterprise Servers Group, will focus on I/O server technology now and in the future. Immediately following, Robert Jecmen, Vice President and General Manager of the Mobile and Handheld Products Group, will talk about issues of interest in the mobile computing arena. And on Thursday, September 17, Patrick Gelsinger, Intel Corporate Vice President and General Manager of the Desktop Platform Group, will discuss how key new technologies and specifications will impact upcoming products across the industry.

On Track with Technology

One of the reasons that IDF has been so valuable in the past for hardware developers is its wide-ranging and in-depth suite of technical presentations and demonstrations, coupled with the opportunity to engage in meaningful discussions with Intel's chief technology architects. Eleven of these comprehensive "tracks" will be offered at September '98 IDF:

- Optimizing AGP for Katmai Platform—http://developer.intel.com/design/idf/tracks/trk_310.htm
- Memory Designs for 1999 Platforms—http://developer.intel.com/design/idf/tracks/trk_311.htm
- Performance Consumer Desktop Platform—http://developer.intel.com/design/idf/tracks/trk_312.htm
- Performance Business Desktop Platform—http://developer.intel.com/design/idf/tracks/trk_313.htm
- Putting Next-Generation Performance in Today's Desktop PC—http://developer.intel.com/design/idf/tracks/trk_332.htm
- Designing a Basic PC—http://developer.intel.com/design/idf/tracks/trk_331.htm
- Workstation Platform—http://developer.intel.com/design/idf/tracks/trk_314.htm
- Server Platform Technologies—http://developer.intel.com/design/idf/tracks/trk_323.htm
- Mobile Platform Design Techniques—http://developer.intel.com/design/idf/tracks/trk_324.htm
- Embedded Technologies—http://developer.intel.com/design/idf/tracks/trk_315.htm
- Technical Summary—http://developer.intel.com/design/idf/tracks/trk_316.htm

In addition to these technical tracks, IDF will offer a number of laboratory sessions designed to enable attendees to gain hands-on familiarity with the latest advances in Intel® Architecture (IA) platform technologies. These labs include:

- Electricity 505 Labs—http://developer.intel.com/design/idf/tracks/trk_411.htm
- Platform Performance Analysis and Integration Labs—http://developer.intel.com/design/idf/tracks/trk_412.htm
- Server Platform Labs—http://developer.intel.com/design/idf/tracks/trk_413.htm
- Mobile Platform Labs—http://developer.intel.com/design/idf/tracks/trk_414.htm

On Track with Intel

IDF has proven itself to be an indispensable source of information for hardware platform developers. In a market where changes occur at an increasingly rapid pace, IDF represents an ideal opportunity to gain a competitive advantage by having personal access to the latest tips, tools, trends, and technologies driving today's and tomorrow's platforms. It's a way to participate directly—not only in learning about where the industry and its technologies are going—but to share in helping to shape the future in a forum designed to bring together leading developers in the hardware community.

If you're a developer and are looking to hone your competitive edge, then please be sure to make plans now to attend IDF. Time is growing short; we recommend that you register for the event before space runs out.

To register and find out more details regarding IDF, scheduled for September 15–17 in Palm Springs, California, please be sure to visit the IDF Web site. <http://developer.intel.com/design/idf>

About the Author:

Dan Russell is Director of Platform Marketing at Intel, where he is responsible for driving Intel's platform strategy and technology initiatives.

USB: The Home PC Broadband Connection

By Karthik Ranjan
Senior USB Technologist, Intel Architecture Labs

Broadband technology is on the way. Whatever “pipe” it uses—xDSL, cable, or satellite, broadband promises a rich new dimension of information, education, communication, and entertainment for both home and business PC users. This promise will not be fully realized unless the industry makes broadband peripherals easy for consumers to install and use. User acceptance is the key—and one of the enablers of user acceptance is the adoption of Universal Serial Bus (USB) for broadband connectivity.

Overcoming the Barriers

Ethernet is the legacy broadband PC connection for residential broadband. While it may be suitable for LAN-equipped offices, the installation of an Ethernet network interface card is anything but trivial for the average home PC user. For broadband service providers, Ethernet represents capital- and service-intensive technology, primarily because of the truck roll that is involved in installing and configuring the customer's PC with the Ethernet-based modem. Moreover, the relative complexity of Ethernet cards makes it highly unlikely that these products will ever be widely adopted in the retail home PC market segment.

The Ethernet installation process involves opening the PC, installing the network interface card, configuring jumpers and then reconfiguring the operating system to recognize and properly utilize the device. The initial installation can easily take 1 1/2 hours or more, and the odds of a customer call-back are high. Broadband service suppliers also need to consider the possibility of unforeseen problems affecting the customer's PC following installation, for which, in many cases, customers hold the service provider responsible.

Connecting a USB broadband modem, by contrast, is as simple as plugging the device into a PC running Windows* 98 and installing the appropriate driver. It is important to recognize that the installation of USB broadband modems will be similar to the installation of any other USB peripheral. As USB devices become more prolific, this will be an experience that is familiar to many PC users. The PC chassis is never opened, and consumers can start enjoying their new broadband Internet link within minutes.

USB: the Universal Choice for Residential Broadband

The USB bus bandwidth is more than equal to the demands of residential broadband connectivity. Both UADSL and cable have bandwidth requirements in the vicinity of 2 Mbps—1.5 Mbps downstream and 500 Kbps upstream. While the aggregate bandwidth of cable is higher, the bandwidth allotted to any one subscriber is approximately 1.5 Mbps. USB's maximum bandwidth of 12 Mbps is more than sufficient to accommodate a broadband modem, in addition to other USB devices such as keyboards, mice, scanners, cameras, or the many other devices that are now available with a USB connector.

Intel's Leadership in USB

Intel has worked with the industry to establish USB as a universal “outside the box” connector for the PC. As a co-developer of the USB 1.0 specification, Intel created the first reference designs for broadband connectivity, including ADSL, cable, and satellite-based communications. In addition, Intel has demonstrated proof-of-concept USB broadband implementations at recent industry trade shows. In the process, Intel has shown that USB is a true Plug and Play connectivity solution at all levels of broadband communications for USB-compliant PCs running Windows 98.

These efforts have helped the industry recognize that USB represents the most versatile, cost-effective and easy-to-use broadband connectivity solution available, with the power to support the widespread deployment of broadband services and applications for home PC users.

Intel's goal is to make the industry transition to broadband as smooth as possible through the adoption of USB as the universal external PC connectivity standard for subscribers that are not already in an existing LAN environment.

USB has been incorporated into the DOCSIS (Data Over Cable Service Interface Specification) standard of the cable industry. An architect within the Intel Architecture Labs authored this contribution to the specification. The first USB broadband modems have now been announced by major vendors including leaders in the modem industry such as Hayes* and 3Com*, and it is expected that xDSL USB-compliant modems will ship in the first half of 1999.

Benefits for the Industry

USB provides the ease of use consumers want and the reliability the industry needs. Service providers will be able to eliminate call-backs, while IHVs will potentially avoid a significant number of product support issues. The bottom line for everyone will be happier consumers. This is all the more significant because consumer acceptance is likely to be a key enabler for the deployment of broadband services and Internet usage—now widely recognized as the principal driver of purchasing in the PC market segment.

Next Steps

IHVs should recognize the value of USB as the cost-effective, easy-to-use external connectivity solution for PC broadband communications and implement USB broadband modems. The Intel® USB Cable Modem reference design is available for licensing to decrease the time-to-market for vendors who are interested.

Telcos and MSOs alike should also recognize the value of USB as the cost-effective, easy-to-use external connectivity solution, and put USB into their RFPs. They should clearly indicate that they prefer USB as the choice of PC connector for broadband peripherals.

About the Author:

Karthik Ranjan, Senior USB Technologist, is responsible for removing the technical barriers to the adoption of broadband devices with USB connectivity. He is specifically involved in strategic industry alliances to support the adoption of USB-based ADSL/Cable modems.

For More Information:

For additional information on USB in residential broadband communications, visit the USB Implementers Forum Developers Web site—<http://www.usb.org/developers/>

For information on Intel reference designs, visit the Intel Architecture Labs' Web site—<http://developer.intel.com/IAL/>

For additional information on USB Cable Modem reference design licensing please contact Teri Lasley at 602-552-2844 or teri.l.lasley@intel.com

On the Fast Track to Universal ADSL

By Mark Peden
Senior Marketing Manager, Intel Architecture Labs
Marketing Chair, Universal ADSL Working Group

Analog modem technology has reached its effective speed limit of 56 Kbps (in reality, 40 to 44 Kbps for most users). While some asymmetric digital subscriber Line (ADSL) solutions have been offered, they are based on proprietary implementations. Standards-based, interoperable ADSL modem products are not yet available. The goal of mass market deployment of high-speed broadband communications may not become a practical reality—unless the industry can agree on a universal, interoperable standard that can be supported by both service providers and independent hardware vendors (IHVs).

Internet access has become the foremost reason that home users purchase a new PC. The number-one complaint of many users continues to be that Internet response time is too slow. Fortunately for the industry, standards now due for ratification by the ITU (International Telecommunications Union) in the fourth quarter of 1998 promise to make the dream of fast Internet access a reality for millions of home PC users.

The Role of Intel Architecture Labs

The mission of Intel Architecture Labs (IAL) is to enable new users and new uses for the PC. Whether the mode of data delivery is copper-based ADSL, cable or satellite, faster communication “pipes” benefit the entire PC industry by opening the door to new Internet applications and by stimulating the usability of PCs and peripheral devices within the home. IAL works closely with the communications industry to help make these new applications and devices a reality.

As a key player in the Universal ADSL Working Group (UAWG), Intel has played an active role in the development of an open specification. Intel has been very instrumental—hosting meetings, arranging interoperability testing events, drafting framework documents, and coordinating field trial activities—in bringing the industry closer together to address the technological challenges of broadband communications.

In addition, Universal ADSL offers significant benefits for the industry, enabling service providers to simplify installation and reduce installation costs. Here’s a summary of what a universal standard offers the industry and its customers:

- Mass market USB (Universal Serial Bus)-compliant high-speed modems will allow consumers to plug in their external modem, install their USB driver software, and connect to the Net.
- It removes the need for the local telephone company or service provider to roll a truck to the consumer’s residence. The need to install special network cabling or configure the user’s PC for an Ethernet network interface card can be avoided.
- The proposed universal standard being developed with the ITU (referred to as G.lite) eliminates the necessity of a POTS splitter. The standard will impose a larger downstream frequency buffer to separate higher ADSL frequencies from the low frequencies used for voice communications. This option will consume key frequency real estate, limiting transmission speed to 1.5 Mbps. A splitter or filters may be added to optimize performance.
- Finally, a copper-based ADSL standard will eliminate the necessity of additional network wiring inside the premises.

Unprecedented Industry Effort

From its inception in January 1998, the proposed Universal ADSL standard has moved toward the proposed October ratification in record time. With over 80 member companies, the UAWG is an independent ad hoc industry group with the sole objective of creating a Universal ADSL standard. The UAWG itself actually represents an unprecedented level of inter-industry cooperation. For the first time in history, telcos, networking companies, and companies from the PC industry are working together toward a common technology for high-speed connectivity. Every RBOC (Regional Bell Operating Company) is a member, and the UAWG roster also includes a significant number of international telecommunications companies.

Intel, together with Compaq and Microsoft, has taken the lead in efforts to bring high-speed communications into the home by providing an alternative to full-rate ADSL technology. While Universal ADSL will not replace current full-rate ADSL offerings, it makes high-speed connectivity a reality for the mass market by its simple and affordable design.

Momentum is Building

Many telephone companies are entering a trial phase with Universal ADSL to complement their full-rate ADSL services. Standards-compliant, high-speed modems with USB connectors are expected to be available in limited quantities by the end of this year. Integration of full-rate ADSL capability into PCs has become a reality—with Universal ADSL to follow shortly.

A common Universal ADSL standard will help to make instantly available Internet connectivity a reality for home PC users. In the process, Always On connectivity will play a key role in the future of the PC in the home, including the new frontier of in-home networking.

Next Steps

IHVs and PC OEMs should learn more about Universal ADSL. Upon determination (ratification), the standard will become public. Meanwhile, a working draft is currently under review by UAWG member companies. Organizations considering development of ADSL products should join the UAWG if they are not yet members.

Application developers and content providers should be ready with “scalable content” applications that can adjust their level of content to the available communications bandwidth and cash in on the processing power of tomorrow’s PCs.

About the Author:

Mark Peden, Senior Marketing Manager at Intel Architecture Labs, is the Marketing Chair of the Universal ADSL Working Group (UAWG) and ADSL Forum Ambassador. His responsibilities include working with key stakeholders in the industry on standards efforts, interoperability activities, field trials, and technology evangelism.

For More Information:

For information regarding UAWG membership, visit the UAWG Web site—<http://www.uawg.org/>

For more information about Universal ADSL and other ADSL developments, check out the TeleChoice Web site—<http://www.xdsl.com/>

Information on Intel® Broadband initiative is available at the Intel Architecture Labs' Web site—<http://developer.intel.com/IAL/>

For information about the ADSL Forum, see their Web site—<http://www.adsl.com/>

Information on the International Telecommunications Union is available at: <http://www.itu.ch/>

Making the PC-Cable Connection

By Teri Lasley
Senior Product Marketing Manager, Intel Architecture Labs

According to statistics released by Forward Concepts, 18.1 percent of American homes currently have access to broadband data services. This number is expected to balloon to 72.4 percent by the year 2002. This infrastructure holds enormous promise for the deployment of data-over-cable services to the home.

While cable modem offerings had their initial trials in 1994 and have been available for more than two years, the products that have been released to date are based on proprietary technologies. *Cable Datacom News* estimates the number of cable modem subscribers to be 250,000 units in the U.S. To promote more widespread adoption, CableLabs, a technical consortium of cable television operators, has created a universal standard (ITU Recommendation J112) known as DOCSIS (Data Over Cable Service Interface Specification). Thanks to these efforts, standards-based interoperable products are becoming available for the first time.

Intel's goal is to promote higher content delivery to the PC and to facilitate the deployment of high-speed communications to the home. To accomplish this objective, Intel has worked with the industry to expedite the adoption of universal standards for interoperable broadband communications, including cable. The adoption of such standards will help to overcome some of the high cost barriers associated with the installation and support of complex Ethernet-based networking products in the home.

Intel and the Cable Industry

Intel's primary role in the development of DOCSIS involves a working agreement that identifies Universal Serial Bus (USB) as the user-friendly external connection for cable modems. Now that USB is a subset of DOCSIS, Intel continues to enable widespread industry adoption by making a USB reference design for cable modems available.

"Cable-Ready" PCs

The creation of DOCSIS makes it possible for PC OEMs to offer customers in selected service areas a "cable-ready PC" configuration capable of instant Internet access over their local cable infrastructure. The data-over-cable standard will also enable the industry to create a variety of PC and modem configurations to meet customer needs. These can range from PCs bundled with USB-compliant cable modems to future host-based migration of some modem functionality. This will move the modem's TCP/IP software stack to the host operating system and utilize the processor and memory resources of the PC for communications, resulting in a lower cost modem.

What's In It for Developers?

With the adoption of DOCSIS, fast USB-compliant cable modems will begin to appear in the retail channel from a number of vendors. The emergence of this market segment has already stimulated the growth of healthy competition within the industry.

The development of an open cable modem standard and "appliance-like" instant Internet communication promises to connect the PC industry to a new frontier of home PC applications. Since Internet use continues to be the primary driver for the home PC market segment, the deployment of fast connections to the home is likely to create new opportunities for suppliers of applications software, peripheral devices and fast PCs.

Next Steps:

- IHVs and PC OEMs should develop products based on DOCSIS.
- Modem suppliers should provide a USB cable modem offering and participate in USB interoperability testing.
- The industry should be ready with "cable-ready" PC configurations and bundled product offerings when data-over-cable services are regionally available.

About the Author:

Teri Lasley is a Senior Product Marketing Manager in the Intel Architecture Labs. She is responsible for promoting the industry's deployment of Internet and high-speed data access via the existing broadband infrastructure.

For More Information:

More information about data-over-cable is available at the Cable Broadband Forum Web site—
<http://www.broadbandforum.com/>

For information about DOCSIS, visit the Data-Over-Cable Web site—<http://www.cablemodem.com/>

Information about cable television industry initiatives and research projects is available from the Cable Labs Web site—<http://www.cablelabs.com/>

Information on Intel's Broadband initiative is available at the Intel Architecture Labs' Web site—
<http://developer.intel.com/IAL/>

More information on USB can be found at the USB Developers' Web site—
<http://www.usb.org/usb/developers/index.html>

Satellite Modems: Delivering High-Speed Content

By Jeff Einarson
Senior Technical Marketing Engineer
Intel Architecture Labs

Broadband applications such as digital television and data broadcast to PCs are not only providing exciting new experiences for end users—they are also creating a need for higher speed data and video delivery methods. Traditional slow connections are not able to keep pace with these new requirements.

The reason for these slow connections can be attributed primarily to analog modem technology, which has reached its limit in terms of overall speed and bandwidth capabilities. Cable modems based on digital technology are poised to offer new and faster alternatives to their analog counterparts, creating a race among various service providers to deliver faster access to home users. Satellite communications are a new alternative that allows the PC to view digital television and receive content and applications at speeds unmatched by current technologies.

The Race in Space

Satellite modems are ideal for applications that require downloading large amounts of data. That's because satellite communications are capable of supporting very high transfer rates of 38 megabits per second (Mb/sec.), providing users with the bandwidth they need to access complex files with high graphics and video content.

While the notion of using satellite modems to accelerate data transfer to PCs is certainly not new, practical implementations are just now getting off the ground. By the end of 1998, several products should be available from different vendors in the marketplace. But some of these imminently available satellite modem solutions are based on proprietary implementations; no standards-based, interoperable products are slated for near-term introduction.

As part of its wide-ranging broadband initiative, Intel Architecture Labs is actively working with other industry leaders to advance the frontiers of satellite communications—and by so doing, increase the capacity of video, voice and data communications to the PC. Intel's efforts in this arena are twofold: working to establish open standards and helping to drive the growth of applications that make the PC more useful and entertaining.

Defining and Adopting Standards and Protocols

A number of specifications and protocols are helping to set the stage for the introduction of satellite modem products. The Universal Serial Bus (USB)-based satellite modem is one such example. While it's based on an accepted specification and its components are easy to install on a PC, its downstream bandwidth is limited to 8 Mb/second. PCI cards, by comparison, provide access speeds of 30 Mb/second. Currently, IEEE 1394-based devices offer the fastest satellite communications connections. An IEEE 1394-based satellite modem combines the ease of installation of a USB-based modem with the high performance of a PCI card.

Intel is currently active in helping to define other satellite-specific specifications, including DVB-T—which has recently been released as an open industry specification. Intel is actively involved in other specifications such as the Advanced Television Enhancement Form (ATVEF)—which describes enhanced TV capabilities. Through its involvement in the Advanced Television System Committee (ATSC), Intel has defined how digital broadcast television will be implemented in the United States.

In addition to its standards activities, Intel is also working on software for today's headends and base stations which are designed to enable and enhance the delivery of voice, video, and data via satellite communications.

Application Development

While advances in standards and technology are needed to accelerate the introduction and acceptance of satellite modems, equally important is the development of compelling applications that ultimately will

require the transfer of large amounts of data—applications for which satellite communications are ideally positioned. Intel is working with a number of companies to advance the state-of-the-art in this area.

For example, Intel is working with Launch Media, Inc. to develop a music magazine—currently distributed by CD-ROM—which can be customized for individual users and broadcast via satellite to their home PC. Similarly, development activities with Nickelodeon are designed to enable vision-enhanced TV which combines animation and other complex capabilities with basic video programming. And Intel is also working with Quokka Sports*, Inc. to develop a Total Sports Immersion* technology that will enable multiple audio and video streams to be delivered to consumers, allowing them to view a sporting event on their PCs from many different camera perspectives and angles.

When considering the relative importance of technology and applications in driving the evolution of satellite modems, one can ask the classic “chicken and egg” question: Which comes first? The answer, realistically, is both. And Intel is doing its part on both fronts to hasten the day when users all over the world can purchase standards-based, interoperable satellite modems to accelerate access to new types of data-intensive content.

About the Author:

Jeff Einarson is a senior technical marketing engineer for the Intel Architecture Labs who is responsible for determining customer requirements and defining technical issues pertaining to satellite communications for high-speed broadcast access to consumers.

For More Information:

Information on satellite modems, visit the Adaptec* Web site—
<http://www.adaptec.com/products/solutions/satellite.html>

Information on applications can be found at:

The Quokka Sports Web site—<http://www.quokka.com/press/quokkapress1.html>

The Intel Developer Relations Group Web site—

<http://developer.intel.com/drg/news/showcase/index.htm#inter>

Beating the Heat: Fan Duct Specification Keeps Systems Cool

By Scott Noble
Senior Industrial Designer
Intel Platform Architecture Lab

While the continued march of integration has taken computer performance to new levels, it has also raised its share of new challenges. This is particularly true when considering the state of today's PC thermal solutions, which have failed to keep pace over the years with the rapid performance increases that have characterized succeeding generations of systems.

Too Hot to Handle

Historically, thermal solutions have focused on the processor, and not the entire system. With the continual emergence of new memory, graphics, and chipset technologies, it has become increasingly difficult to provide adequate cooling mechanisms to ensure reliable operation of *all* components. As a result, most OEMs have had to rely on expensive, inefficient, and space-hogging "band-aid" solutions such as extra fans, larger heat sinks, and heat spreaders.

Newer components continue to push the performance envelope. Next-generation systems that want to take advantage of high-performance components will require a more complete and integrated system-level cooling solution that doesn't require extensive changes or retooling of the chassis. That's where Intel's new Fan Duct specification can help!

Improved System-Level Cooling

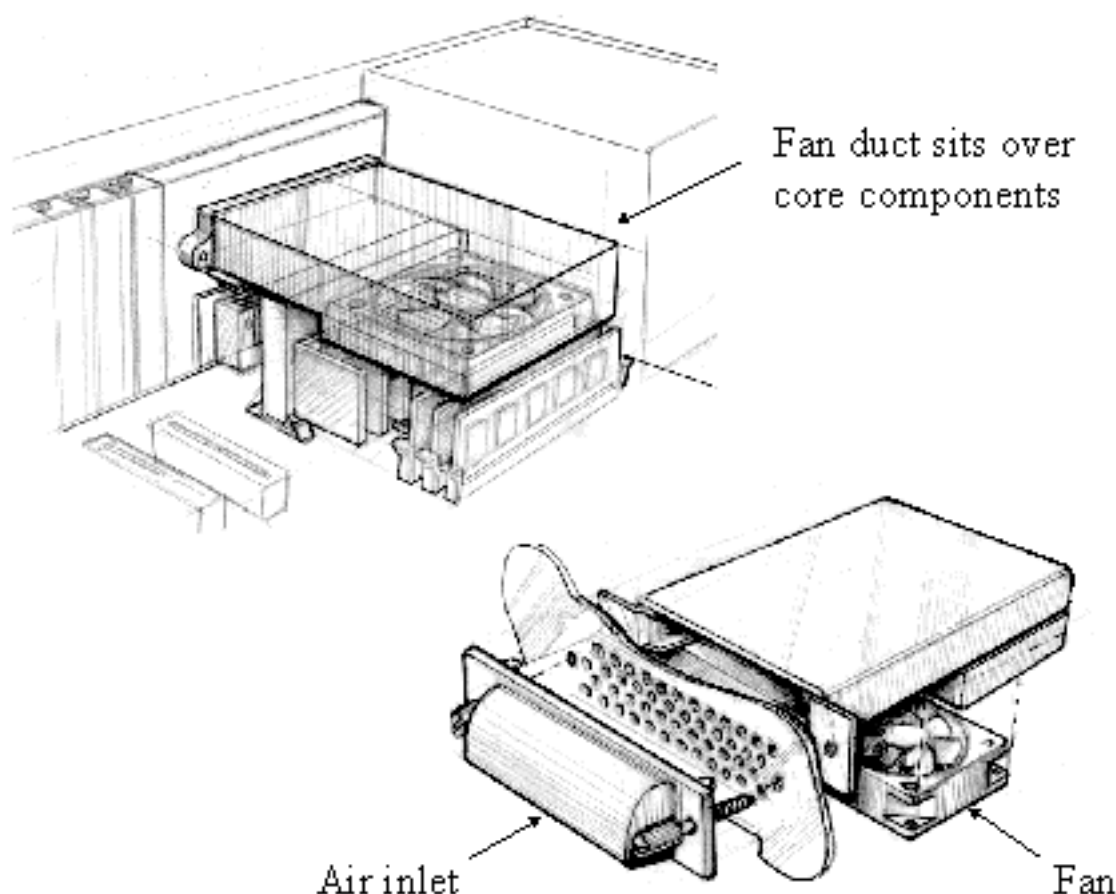
Intel's recent announcement of version 1.0 of the Fan Duct specification will provide OEMs and IHVs with an effective thermal solution that will extend the life of current chassis designs. Fan Duct enables PC manufacturers to bring true next-generation performance systems to market more quickly by eliminating the need to design and tool new chassis enclosures to cope with the challenges of greater power and heat dissipation. Overall, the new Fan Duct specification helps OEMs reduce system noise while improving airflow and internal system temperatures—even in emerging small chassis form factors such as microATX.

The Fan Duct concept was first introduced at last February's Intel Developers Forum in order to gain feedback from the industry. Following several months of testing and refinement the Fan Duct specification was recently announced. Intel worked closely with leading system and board-level OEMs in the U.S. and the Pacific Rim to develop the specification which will enable manufacturers to bypass many of the constraints inherent in the ATX chassis design.

For example, one of the problems of the ATX form factor is that most of the key components that require cooling are typically placed in the back corner of the system motherboard. This location has traditionally been difficult to provide adequate cooling and airflow. The fact that these same components are not lined up sequentially in most designs has added to the thermal problems. The Fan Duct specification provides a solution for both of these dilemmas.

Cooling the Core

Along with providing cooler air in the system chassis than in previous solutions, Intel's Fan Duct solution has been uniquely designed to provide air directly to the core components that need it most. This is accomplished by mounting a fan directly over these key core components, including the processor, memory, and chipset implementations. The Fan Duct also supplies cooling to an AGP add-in card even though the fan is not mounted over the card. In addition, the Fan Duct solution employs a tube that enables the fan to draw in fresh air from the outside and spread it around the entire core of the system, instead of merely cooling the processor.



A typical fan duct implementation based on the Fan Duct Specification

As an open specification, Fan Duct 1.0 provides a universal solution across the industry that enables OEMs of all sizes to provide cost-effective thermal solutions and saves valuable design time and engineering investments. And while the Fan Duct specification is an ideal solution for next-generation systems, it can easily be implemented in existing chassis enclosures, efficiently extending the useful life of current designs and providing further cost savings for system manufacturers.

Staying Cool

The Fan Duct specification 1.0 is part of Intel's continuing efforts to provide the industry with enabling technologies that advance the performance and functionality of today's and tomorrow's computing platforms. The Fan Duct specification is complete; all the thermal engineering has been done; initial samples are available; and OEMs can follow the design to achieve system-level cooling with minimal impact to their current chassis solutions.

About the Author:

Scott Noble is a senior industrial design engineer for Intel who has developed concepts and set design directions for chassis programs that include ATX, NLX, and Net PC. He is currently working on concepts for next-generation chassis architectures.

For More Information:

Plan to attend the Intel Developers Forum (<http://developer.intel.com/design/idf/>) in September for more information and sessions on Fan Duct technology.

To request a copy of the Fan Duct 1.0 specification, send e-mail to Jim Noval at jim.noval@intel.com

Plugfest: Where the Best Come to Test

By Patrick Bohart
Technical Marketing Engineer
Platform Marketing, Intel Corporation

Prior to this September's Intel Developers Forum Conference, Intel will offer a multi-technology "Plugfest" designed to provide compatibility testing for AGP, Instantly Available PC/ACPI, and DVD. The event will take place August 31–September 4 at the Embassy Suites Hotel in South San Francisco, where testing will be held in private one-on-one sessions, with NDA available if needed.

The motivation behind hosting a multi-technology Plugfest lies in maximizing the benefit to system manufacturers, add-in card vendors, and software content developers. Combining AGP, Instantly Available PC/ACPI, and DVD compatibility testing will maximize the benefit for all participants and allow the cross pollination of ideas, testing procedures, and testing practices that could not occur at isolated events.

One-on-One Testing

Testing will be scheduled in one-on-one sessions between system manufacturers—who will remain stationary within the suites—and add-in card vendors, CODEC vendors, and content developers, who will travel from suite to suite to conduct the tests. AGP and Instantly Available/ACPI testing will take place August 31–September 2, with DVD testing taking place September 3–4.

Each technology will have a pre-defined software suite and test procedure, and results for each test will be collated and distributed in an anonymous format to the testers so that general trends can be discovered. All of the necessary software will be provided, and test procedures will be available in advance of the event.

- **AGP** testing will use IBASES (Intel® Baseline AGP System Evaluation Suite) as the cornerstone of the testing process. Included are tests to measure the adapter, show the utilization of AGP memory in comparison to video local frame buffer memory, measure AGP texturing from main memory under various load conditions, as well as an OpenGL* test. All tests will be conducted at a screen resolution of 800 x 600, with a color depth of 16 bits.
- **Instantly Available PC/ACPI** testing will focus on the ACPI defined S1 and S3 (Suspend to RAM) sleep states. The tests are designed to observe driver behavior and system-level interactions between drivers, hardware and the ACPI interface. The tests are divided into general testing for all system/add-in vendors, additional wake-on-ring testing for modem vendors, Wake-on-LAN* testing for NIC vendors, and audio subsystem testing for audio vendors. All testing will take place on Windows* 98, except for the Wake-on-LAN tests—which will be conducted on a Windows NT* 5.0 beta release. The software suite includes the Intel® Power Management Analysis Tool (IPMAT), Microsoft's ACPI-HCT*, and a PMTest utility from the PCI SIG designed to test system/card PMC registers.
- **DVD** testing will take place among system OEMs, CODEC vendors, and content providers. The test suite is intended to gauge the level of cross-platform compatibility between software and hardware CODECs and DVD content. Tests involve MPEG-2 playback, with attention paid to level of quality, detection and identification of visual artifacts, audio/video controls, and a series of installation and shutdown tests. The DVD test suite also consists of a series of optional tests for power management, subtitles and 3D/MPEG-2 coexistence testing. All testing will be performed on Windows 98 and use DirectX5*.

Beyond Testing

In addition to the one-on-one testing, a number of opportunities will be available to all participants, including:

- **IPEAK Training Lab:** A suite will be available to all participants to engage in advanced training with the family of IPEAK platform performance tools. Additional training on IPMAT and IBASES will be available, with training on the DVD Qualification and Integration Kit (DQUIK).
- **Industry Experts Suite:** Architects and engineers from the PC industry will be scheduled to engage in technical discussions about the technologies included at the event.
- **Intel Platform Solutions Lab Testing and Debug Suite:** A debug suite hosted by engineers from IPSL will provide low-level testing and debug to all system manufacturers and add-in vendors. IPSL will also be hosting a series of BIOS and thermal tests.

Register Now

Registration fees for the Plugfest vary from as low as \$100 per person per test, on up through \$250 for those individuals who would like to attend all 5 days of testing. Members of the AGP Implementers Forum will incur no fee to attend the AGP portion of the testing, since their fees are included in the AGP-IF annual membership.

About the Author:

Patrick Bohart is a technical marketing engineer at Intel, where his responsibilities include industry enabling collateral and events for Intel's Instantly Available PC initiative.

For More Information:

See the IDF Designing Platform Solutions Plugfest Web site (<http://developer.intel.com/solutions/tech/plugfests/plugfest.htm>) for more information, including how to register and make hotel reservations.

Instantly Available PC Technology: Energy Savings in a Changing World

By Steve Brown
Strategic Initiatives Manager
Intel Platform Marketing

Last year's global warming agreement reached in Kyoto, Japan, promises to have a significant effect on the global PC industry. At the meeting, more than 150 countries committed to reduce their emissions of greenhouse gases over the course of the next 15 years by 5.2 percent below 1990 levels. One of the consequences of the agreement may be that manufacturers have to produce more energy efficient PC products. In some parts of the world, in fact, failure to comply with these standards could lead to heavy fines and a corresponding loss of business opportunities.

By any measure, the potential effects of these regulatory changes are huge. As more and more demand is created for energy-efficient products, and "sleep" state requirements drop substantially, the PC industry faces the possibility of having to balance innovation and performance against regulatory requirements. This is particularly relevant in markets like Japan, where future energy efficiency regulations will be mandatory.

ENERGY STAR[®]: Where Less Is More

Perhaps the most important and well-known energy efficiency standard today is the ENERGY STAR[®] program, developed and managed by the U.S. Environmental Protection Agency (EPA) and run in partnership with the PC industry. While the program is a voluntary one for the U.S. marketplace in general, all PC purchases by the federal government must meet ENERGY STAR guidelines. In addition, the EPA is aggressively recruiting state and local governments and other major corporations to specify ENERGY STAR-compliant products. The ENERGY STAR program is also being extended to include consumer electronics and appliance markets, broadening the reach and recognition of the ENERGY STAR brand. These developments are influencing the general market, where an increasing number of IT purchasers are now requiring products meet ENERGY STAR guidelines.



"Adoption of the ENERGY STAR[®] specification in new markets will bring added benefits to global PC manufacturers by reducing their design, marketing and compliance costs" – **Andrew Fanara, manager of the EPA's ENERGY STAR Office Equipment Program**

Today, meeting these requirements means supporting a “sleep” mode that enables the PC—not including the monitor—to consume less than 30 watts of AC power. But by mid-1999, the ENERGY STAR program will likely be changed in two significant ways. First, PCs will be required to wake up from external stimuli, such as the ringing of the phone or access across the network. And second, PCs will be required to reach a substantially lower sleep state, possibly as low as 15 watts. Recent announcements by the EPA confirm the inevitability of these changes; for more information, and to confirm full details of the new specification, visit the EPA Web site.

<http://www.epa.gov/appdstar/esoe/techinfo.html>

Repercussions around the World

Beyond the U.S., the ENERGY STAR program has already been adopted by Japan, and New Zealand, while countries such as Canada, Mexico, South Africa, and Australia are poised to enter the fold. The ENERGY STAR program is also likely to be adopted by the European Union, further increasing awareness of ENERGY STAR-compliant products and increasing usage of energy efficient PCs. In addition, the newly defined European Eco-label program, run by the European Environmental Commission, intends to reward future products that go the extra mile in delivering leading energy efficiency by meeting or beating the program’s specifications.

A number of other fragmented power-management standards also exist in the European marketplace. But regardless of what particular standard is being adopted or observed, markets all over the world are essentially being driven to decrease energy consumption levels. That means significant changes for PC manufacturers—and that’s where Intel’s Instantly Available PC technology can help.

The IAPC: Power Down, Performance Up

Intel has been working for a number of years to deliver technology building blocks that enable PC manufacturers to continue to build exciting and innovative products, yet still meet new regulatory requirements. At the center of this effort is Intel’s Instantly Available PC (IAPC) technology, which helps enable designers to meet stringent sleep-state targets—even on fully-loaded, high-performance systems.

IAPC employs a “configuration independent” mechanism, where all major subsystems—such as graphics, audio, the processor, and the hard drive—have power removed when asleep. This enables OEMs to continue to innovate in ways that deliver higher performance and new features, without having to worry about regulatory impacts. The IAPC architecture also allows certain parts of the system, such as modems and network interface cards, to draw a small trickle current that enables them to wake the machine when an external event occurs.

Intel is continuing its efforts to advance the frontiers of Instantly Available technology. Over the course of the next few months, for example, Intel plans to introduce new power budgeting software designed to address the lack of operating system code needed to manage the power requirements of wake-up devices installed in the system.

While the spate of changes to regulatory environments around the world poses a significant challenge to the PC industry, the groundwork has been laid for delivery of new compliant products within the next 6–9 months. That groundwork can be found at the heart of Intel’s Instantly Available technology, developed to maintain and ensure the delicate balance between high-performance *and* low-power consumption in today’s and tomorrow’s PCs.

“Typically, new technology has been associated with increased energy consumption, but technology leaders like Intel are ushering a new era of energy efficiency.” – Andrew Fanara, manager of the EPA’s ENERGY STAR Office Equipment Program

About the Author:

Steve Brown is a strategic initiatives manager in Intel’s Platform Marketing group, where his responsibilities include all efforts to enable OEMs to bring products to market that take advantage of Intel’s Instantly Available technology. Steve also works closely with International Government bodies to understand and influence future policy directions affecting the PC industry.

For More Information:

For more information on Instantly Available PC technology, check out the IAPC Web site—

<http://developer.intel.com/technology/iapc>

Breaking the Server I/O Bottleneck

By Dexter Johnson
Product Manager, i960® Rx I/O Processors
Intel Corporation

Developers of Intel® Architecture-based servers are faced with the challenge of optimizing I/O performance in an environment of increased data traffic. To understand why this is important, we need to look at two factors that impact server I/O throughput.

- While processor performance continues to scale according to Moore's Law, I/O processing capacity has been slower. Four- and eight-way servers based on the Pentium® II Xeon™ processor are now arriving, offering a new level of processor scalability. The widening gap between rapidly scaling processor performance and I/O processing inevitably leads to less-than-efficient I/O results.
- Server I/O traffic is rapidly scaling. While network traffic will increase dramatically with the adoption of Gigabit Ethernet and other high-bandwidth solutions, there is another trend with a much more immediate impact on server I/O. Large RAID subsystems are gaining popularity as Intel Architecture-based servers are deployed for mission critical and enterprise computing applications. While RAID promises to improve both the performance and reliability of server mass storage, it is an inherently interrupt-intensive application. Burdening the server's processor with the task of handling RAID interrupt traffic can degrade server performance.

In order to keep overall server performance scaling upward, it is necessary to balance more powerful processors with intelligent I/O subsystems. Intel has introduced two new i960® Rx I/O processors that enable developers to improve I/O performance in servers and intelligent adapter cards in a cost-effective way.

The Intel® i960® RM and RN I/O Processors

The Intel® i960® RM and i960 RN I/O processors introduce a new balanced dataflow architecture that includes a new Application Accelerator Unit (AAU) with a hardware XOR engine for calculation of parity data for RAID Level 3 and Level 5 (striping with parity) applications. This architecture eliminates the need for RAID developers to create their own hardware or software XOR solution. It also enables a significant performance improvement over software-based RAID parity calculations. By integrating the I₂O* split-driver software stack, the i960 RM and RN I/O processors allow Intel Architecture-based servers to support extremely large RAID storage subsystems in high-speed transaction processing environments.

Implementing Intelligent RAID

Hardware-based Intelligent RAID is implemented by means of a disk controller that includes a dedicated processor, such as the Intel i960 RM and RN I/O processors, together with firmware for data striping and parity calculations. The controller improves system performance by offloading interrupt-intensive RAID processing from the server's processor. By handling parity calculations, Intelligent RAID frees the server for its primary role of application processing. The i960 RM and RN I/O processors support the cost-effective implementation of standards-based intelligent I/O.

I₂O* Technology—Standards-Based I/O

I₂O technology is an open industry specification that defines a standard architecture for intelligent I/O. I₂O technology was developed to address the need for a high degree of interoperability between I/O devices and servers from different vendors.

I₂O technology addresses the interoperability problem by making I/O applications, such as RAID, independent of both the device and the specific host operating system. I₂O technology incorporates a "split-driver" model that eliminates the need for developers to create special drivers for each combination of RAID controller and operating system.

I₂O drivers have two components: the Operating System Services Module (OSM), which resides in the

host operating system, and the Hardware Device Module (HDM), resident on the RAID adapter. There is an OSM for each device class. The OSM and HDM interface with each other through a standardized communications system (similar to a communications protocol) that isolates the RAID storage device from the specific bus and operating system interfaces of the host. This software stack makes the HDM host-independent and portable across any operating system, provided that the operating system has an OSM that supports mass storage devices. I₂O OSMs for mass storage are now available from a variety of operating system suppliers, including Novell, SCO, and Microsoft.

Next Steps

Intel's latest-generation i960 Rx I/O processors support balanced server performance, scalability and reliability by helping to address the I/O processing inefficiencies. The high performance, familiar architecture, and tools support of Intel i960 Rx I/O processors have led to their wide adoption by leading server OEMs and adapter card vendors in record-setting products.

- Server OEMs should design server I/O subsystems that deliver the balanced system performance of intelligent RAID and I₂O technology. Developers should consider the cost-effectiveness and flexibility of motherboard implementations of the i960 RM and RN I/O processors.
- RAID adapter card vendors should design products with Intel's new generation of i960 Rx I/O processors to support higher levels of transaction processing performance.
- IT managers should specify servers equipped with intelligent I/O subsystems, based on Intel I/O processors.

About the Author:

Dexter Johnson is the product manager for the i960 Rx I/O processors. He is responsible for life-cycle management of Intel i960-based I/O processor solutions.

For More Information:

For more information on I₂O technology and Intel i960 Rx I/O processors, visit Intel I/O processor Web Site—<http://developer.intel.com/design/IIO>

Technical information and announcements on I₂O technology are available from the I₂O Special Interest Group—<http://www.i2Osig.org>

Platform News

Business

Intel Corporation Extends Market Segmentation Strategy With StrongARM* Microprocessor Products

Intel plans to use products based on the low-power, high-performance StrongARM* microprocessor architecture to extend its market segmentation strategy. Key segments include PC companions, smart mobile phones, and mobile point-of-sale devices, as well as digital TV set top products and Web-enabled desktop screen phones.

<http://www.intel.com/pressroom/archive/releases/EM072798.htm>

HP and Intel to Develop Policy-Based Network-Management Solutions

Hewlett-Packard Company and Intel Corporation today announced they are working together to develop an open, standards-based policy-based network-management solution that will control network bandwidth and other network services, such as security and virtual private networks (VPNs), across heterogeneous networking environments.

<http://www.intel.com/pressroom/archive/releases/FM072098.htm>

Wired for Management (WfM)

Intel Extends the Reach of LANDesk® Client Manager to Non-Wired for Management Systems

At the Wired for Management (WfM) Summit on August 3, 1998, Intel introduced a new version of LANDesk® Client Manager that provides a migration path for customers who want to increase the management level of older PCs as they move toward full deployment of WfM-enabled systems. Intel® LANDesk Client Manager cv can be loaded onto any Intel® Pentium® processor-based or newer PC to deliver critical system alerts, system information and remote repair tools to the same easy-to-use LAN management console used to monitor and repair WfM-enabled systems preconfigured with LANDesk Client Manager. LANDesk Client Manager cv will be distributed by leading PC manufacturers and management software vendors such as IBM and Tivoli. A limited-use preview version of the software is available for download on the Internet at <http://www.intel.com/network/oem/clientmgr>.

LANDesk Client Manager cv will be available for license beginning in the fourth quarter of this year.

<http://www.intel.com/pressroom/archive/releases/LD080398.HTM>

Mobile

Intel's Wired for Management Initiative Extends Benefits for Mobile Systems and Servers

With mobile PCs comprising a significant percent of all business PC shipments, the need to manage these systems has become essential to businesses. WfM-enabled mobile Pentium II processor-based systems combined with currently available management software applications, such as LANDesk Client Manager v3.2, are capable of asset management, remote help desk support and enterprisewide software deployment via LAN or telephone line. Two additional management features, remote system wake-up and mobile PXE (universal network boot), were demonstrated by Intel for the first time on WfM-enabled notebook systems. The new capabilities will enable remote, off-hour administration and one-step new system configuration, allowing mobile systems to be managed the same way as desktop and server systems. These new features will become available for mobile systems in the near future.

<http://developer.intel.com/pressroom/archive/releases/WM080398.HTM>

The Bluetooth Developer's Conference

The Developer's Conference is a worldwide event sponsored by the Bluetooth SIG founders, and will be held in the U.S. this October. Created for SIG members, the conference is designed to give companies the information and contacts they need to develop and market products based on the Bluetooth technology. Highlights include:

- A chapter-by-chapter review of the Bluetooth technology specification, including technical as well as legal components.
- Detailed implementation training that takes you beyond the spec and helps you design real products.
- Business development and networking opportunities with other Bluetooth SIG members who are

committed to bringing products to market.

- Marketing and promotions planning for product launches.

For more information about the Bluetooth technology or joining the Special Interest Group, and for upcoming details of the Bluetooth Developer's Conference, check out www.bluetooth.com.

Server

Now Available—Hardware Design Guide Version 2.0 for Windows NT* Server

Co-authored by Intel and Microsoft and now on its second version, this design guide describes the hardware requirements for server platforms to deliver the best user experience with the Windows NT* Server operating system.

<http://developer.intel.com/design/servers/desguide/>

Workstations

Final Accelerated Graphics Port (AGP) Interface Specification for High-Performance Workstation Market Segment is now available

Details on the AGP Pro interface specification, included as an addendum to the AGP Interface Specification Rev 2.0, can be found at www.agpforum.org. AGP Pro is expected to deliver up to four times the electrical power of today's AGP interface specification. It includes an enhanced connector, improved cooling system, form factor specifications such as graphics card size, and layout specifications to meet the demands of workstation graphics users on both IA-32 and IA-64™ platforms. The new specification will be supported in both AGP 2X and AGP 4X modes. AGP Pro includes advanced capabilities such as high-performance single and multiple image display, integrated video and 3-D functionality, and advanced realism. These features will significantly improve performance for users of simulation, mechanical CAD, financial modeling and digital content creation applications.

<http://www.intel.com/pressroom/archive/releases/AG072198.HTM>

Intel Advances Workstation Platform with Industry Motherboard and Chassis Specification

Intel's efforts in driving the new chassis specification are consistent with Intel's strategy to provide technical leadership and products to all facets of the workstation market segment, from processor advancements such as the Pentium II Xeon™ processor for workstations to platform innovations to initiatives with key workstation OEMs and application vendors. WTX and WTX Pro-compliant motherboards and systems will include the following capabilities:

- dual processor IA-32 and IA-64 support;
- thermal, mechanical and power envelopes optimized for high-end APG Pro graphics cards;
- stable, functional partitioning designed to support multiple generations of graphics, memory technology, I/O and Intel® Architecture microprocessors; and
- industry-standard chassis, power supply and motherboard form factors optimized for leading-edge workstations.

<http://www.intel.com/pressroom/archive/releases/WP072198.HTM>

Technology News

DVD

IDF Designing Platform Solutions Plugfest Information, South San Francisco, CA—August 31–September 4, 1998

The best opportunity to test your PC Platform Technologies with others in the industry. If your products include AGP, DVD, or Instantly Available PC/ACPI, come to this event to test with other industry leaders.
<http://developer.intel.com/solutions/tech/pluginests/pluginest.htm>

Join us at the U.S. DVD Conference in San Francisco, CA—October 1–2

The two-day conference provides an excellent opportunity to explore the fast-extending scope of DVD, and latest format developments. Among key items on the agenda will be the recent standardization of DVD-Audio, DVD-RAM, DVD-R and DVD-RW. Also, there will be displays and demonstrations of the latest DVD products and technologies. Intel will be presenting as well as showing capabilities of DVD on the PC.

<http://www.dvdforum.org/>

DVD Technology Newsgroup Now Available

We are pleased to announce the creation of the DVD technology newsgroup. We encourage you to visit the group and submit any questions that you may have regarding DVD technology and its implementation on the PC platform.

IAPC

Components are now coming on-line that support the Instantly Available PC initiative, for a complete and growing list of supporting companies see:

<http://developer.intel.com/technology/iapc/involve.htm>

IPEAK

1394 IPEAK toolkit is available now

1394 Toolkit beta 1.0 given out at the 1394 Developers Conference. The Intel® 1394 Toolkit is a software suite which lets you monitor performance and verify the operational stability of your 1394 PC drivers, system bus and peripherals. It is a part of the IPEAK (Intel® Performance, Evaluation, and Analysis Kit) program. Download the five use demo version of the 1394 Toolkit (beta 1.0).

<http://developer.intel.com/design/ipeak/1394/index.htm>

1394

1394 Technology Newsgroup Now Available

We encourage you to visit the group and submit any questions that you may have regarding 1394 technology and its implementation on the PC platform.

<http://support.intel.com/newsgroups/1394.htm>

Industry Events

California Computer Expo

August 20–23, San Diego, CA

Enhancing the home and office through computer technology, Intel will present a paper on "Home Networking - Unleashing the Power of the Multi-PC Home."

<http://www.computoredge.com/expo/>

IDF Designing Platform Solutions Plugfest

August 31–September 4, 1998 South San Francisco, CA. The best opportunity to test your PC Platform Technologies with others in the industry. If your products include AGP, DVD, or Instantly Available PC/ACPI, come to this event to test with other industry leaders

<http://developer.intel.com/solutions/tech/pluginests/pluginest.htm>

Intel Developer Forum

September 15–17, Palm Springs, CA

Features 11 graduate level technology training tracks. Over 70 technical sessions will focus on the latest desktop, mobile, server, workstation, and embedded platform technologies with direct access to Intel's top engineers and architects.

<http://developer.intel.com/design/idf>

U.S. DVD Conference

San Francisco, October 1–2

The two-day conference provides an excellent opportunity to explore the fast-extending scope of DVD, and latest format developments. Among key items on the agenda will be the recent standardization of DVD-Audio, DVD-RAM, DVD-R and DVD-RW. Also, there will be displays and demonstrations of the latest DVD products and technologies. Intel will be presenting as well as showing capabilities of DVD on the PC.

<http://www.dvdforum.org/>

The Bluetooth Developer's Conference

The Developer's Conference is a worldwide event sponsored by the Bluetooth SIG founders, and will be held in the U.S. this October. Created for SIG members, the conference is designed to give companies the information and contacts they need to develop and market products based on the Bluetooth technology. Highlights include:

- A chapter-by-chapter review of the Bluetooth technology specification, including technical as well as legal components.
- Detailed implementation training that takes you beyond the spec and helps you design real products.
- Business development and networking opportunities with other Bluetooth SIG members who are committed to bringing products to market.
- Marketing and promotions planning for product launches.

For more information about the Bluetooth technology or joining the Special Interest Group, and for upcoming details of the Bluetooth Developer's Conference, check out <http://www.bluetooth.com>

Power 98

October 4–7 Santa Clara, CA.

This conference brings together leading manufacturers of batteries, power supply systems, electronics components, mobile computing products, and wireless communications devices. Intel's Bob Jackson will participate on a panel on power management.

<http://www.gigaweb.com/events/>

Fall Internet World 98

October 6–8, New York, N.Y.

Conference provides opportunity to learn about Internet, Intranet, and Web applications. Intel's Gregg Adkin and Ken Stober will participate in a panel discussion on "Web TV."

<http://events.internet.com>

Next Generation Networks

November 2–6, Washington D.C.

Understanding the future trends in high performance networking. Intel's Chuck Smith, will present "New Development in Networked Collaboration," on November 4th.

Comdex Fall

November 16–20, Las Vegas, Nevada

Major show for computer industry's independent resellers of computer systems and related products.

<http://www.comdex.com>

Intel Networking Events & Training

For Intel's events and training programs on networking products and technologies, please visit the Intel networking events page.

<http://www.intel.com/network/events/index.htm>

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